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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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09/414,004 10/07/99 KATSAP

V 2925-0411P

EXAMINER

MMC2/0108

BIRCH STEWART KOLASCH & BIRCH LLP

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FERNANDEZ, K

ART UNIT

PAPER NUMBER

2881

DATE MAILED:

01/08/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/414,004

Applicant(s)

KATSAP ET AL.

Examiner

Kalimah Fernandez

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/22/00 is/are objected to by the Examiner.
- 11) ☒ The proposed drawing correction filed on 22 February 2000 is: a) ☐ approved b) ☒ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 18) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

DETAILED ACTION

Oath/Declaration

1. Acknowledgement is made of the receipt of a copy of the original executed Declaration and Power of Attorney submitted on 10/7/99. The document was received and made of record on 2/22/00.

Drawings

2. The corrected or substitute drawings were received on February 22, 2000. These drawings are not acceptable for the following reasons: 1) In Figure 2, numeral (25) as referred to in specifications page 4, line 16 has been omitted; 2) In Figure 2A, the numeral (20) is denoted twice, which may lend to confusion; and 3), the liner flange as referred to in disclosure on page 4, line 32 has been omitted. In addition, Figure 2b omits numeral (22), which indicates weld according to the applicant's disclosure (page 5, line 1).

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Lens Array for Electron Beam Lithography Tool.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

5. Claims 1,3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 1 recites a charged particle illumination system component comprising only a lens array. Whereas, claims 3 and 4 recite additional components: electron gun and liner tube. The language of claims 1,3 and 4 tends to indicate that: the lens array, electron and liner tube are unconnected.

7. Namely, the usage of the term "is" in claims ³~~2~~ and ⁴~~3~~ is improper, because the recitation of lens array in claim 1 can not simultaneously be an electron gun and a liner tube as claimed. In present form claims 1,3 and 4 creates inconsistency between applicant's claims and specification (i.e. the specification discloses an electron gun having a lens array(s) and a liner tube). Therefore, the subject matter as claimed does not distinctly point out, which the applicant regards as his invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 8-10, 14-16, 19-21, and 25-26 are rejected under 35 U.S.C. 102(b) as being anticipated by US Pat No. 4390789 issued to Smith et al. Smith teaches an electron beam array lithography system comprising of an electron gun and a lens array (col.1, lines 50-60). Smith, further, teaches the plurality of lens array (col. 6, lines 4-8).

To the extent as understood, the recitation of a charged particle illumination system component, comprising of a lens array as in claim 1; of an electron gun in claim 3 and the plurality of mesh grids as in claims 8-10 are, thereby, anticipated by Smith.

9. As per claim 2, Smith illustrates in Figure 2 the placement of lens array (denoted by numeral 11) disposed in the drift region of the apparatus. Although, Smith does not explicitly disclose the drift space placement; it is widely understood as explained by applicant (page 4, lines 24-28) the lens array are in a region, in which no acceleration or de-acceleration is simulated.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 4-7, 11-13, 17-18, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of US Pat No. 5376792 issued to Schamber et al. Schamber discloses an inner and outer liner tube connectable to the electron gun (col.7, lines 23-40 and col.8, lines 15-18). In figure 6, illustrates the connection of liner tube to said electron gun via crimping and bolting (also, see col.7, lines 42-45).

12. In addition, Schamber's disclosure describes the adaptability of said liner tube to a vacuum environment (col. 7, lines 29-32 and col. 8, lines 56-59). Schamber discloses the claimed limitations of claims 4-7 except for the welding together of the liner tube and the electron gun of claim 7. It would have been obvious to one having ordinary skill to

proposing the welding of said elements, since these are recognized equivalent connecting means. Moreover, the selection of any of these known equivalents would be within the level of ordinary skill in the art.

13. Finally, the rationale to combine Smith and the teachings of Schamber can be easily reasoned from knowledge generally available to one ordinary skill in the art. Namely, liner tube are commonly used in the art to address vacuum requirement of a charged particle illumination system and such. Smith acknowledges the necessity of a vacuum environment (see figure 2). Therefore, one of common skill in the art can easily reason the addition of liner tube in Smith.

14. In regards to claim 11, as discussed by applicant, " techniques for forming suitable screens from a continuous layer may occur to those skilled in the art (page 5, lines 19-31). It is considered an obvious substitution to use a mesh grid as claimed in 11 for the lens array structure as taught by Smith in figure 6 (also, see col.14, lines 34-46 of Smith). Claim 12 is rejected as discussed in addressing claim 11. In addition, it follows that said lens array would have substantially range of transparency as in claim 13 from it's purpose is aid in focusing and controlling emittance. If said lens array did not have a reasonable capability to transmit the electrons; it would not serve its purpose. Furthermore, Smith illustrates the capability of his invention to transmit at least 80% of incidenting electrons in figure 6. Therefore, claims 11-13 are obvious in view of Smith's disclosure and the generally knowledge available in the art.

15. As per claims 17-18 and 22-24, the limitations of said claims are discussed in addressing claims 4-5 and claims 22-24 and likewise claims 17-18 and 22-24 are rejected.

16. Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith. As per claim 27, as admitted in applicant's disclosure, SCALPEL, MEBES and EBES are well known and in usage in the art. In fact, Smith teaches an electron beam exposure system, i.e. EBES. It is certainly no leap for one of common skill to propose the implementation of said tools in Smith, given the state of the art.

17. As per claims 28-29 are discussed in addressing claims 4-5 previously and are likewise rejected.

Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kalimah Fernandez whose telephone number is 703-305-6310. The examiner can normally be reached on 7:00am-3:30.


19. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teresa Arroyo can be reached on 703-308-4782. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and for after Final communications.

20. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

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Art Unit: 2881

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January 5, 2001


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